SBC836A1

All-in-One Petit Board
with DualView and Serial ATA

User's Manual

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ESD Precautions

Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.

Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.

Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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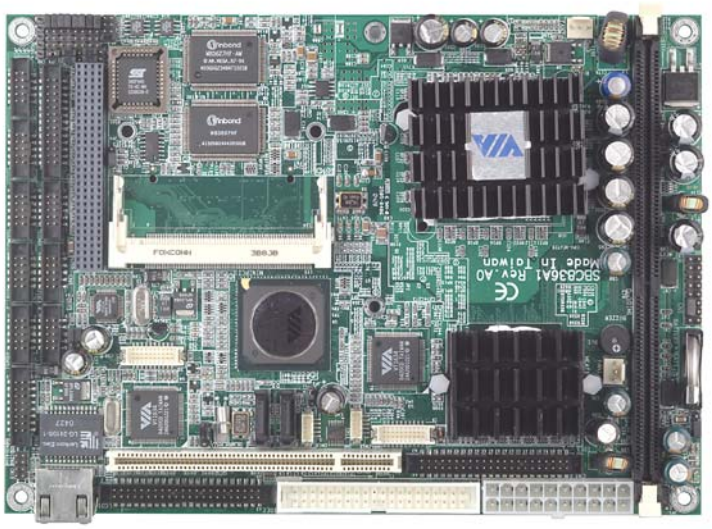
Chapter 1
Introduction



The **SBC836A1** is a VIA EDEN 400/667/800/1G FANLESS -based Petit board with Ethernet and audio interface. Designed with the space-limited applications in mind, the **SBC836A1** is practically the finest embedded PIII-level in existence. Using a standardized format conforming to the size of a 5.25" CD-ROM drive, **SBC836A1** can adapt a wide variety of VIA EDEN microprocessors by BIOS auto-detection. To simplify system integration, it packs embedded provisions such as super I/Os, Graphics with DualView features, LCD (TTL & LVDS), Ethernet (Gigabit & Fast), solid state disk, all on a single board. Unique embedded features such as 4 serial ports (3 x RS-232, 1 x RS-232/422/485) with +5V/12V power capability and simple automation control are exclusive design features that allow adoption of an extensive array of PC peripherals.

Designed for the professional embedded developers, the VIA EDEN embedded board **SBC836A1** is virtually the ultimate one-step solution for embedded system applications.

1.1 Specifications

- **Chipset:** CLE266+VT8237
- **Bus Clock:** 66,100,133MHz
- **CPU:** EDEN 400/667/800/1G
- **L2 Cache:** Integrated in CPU
- **BIOS:** 4Mbit PnP Flash BIOS
- **System Memory:**
  - 1 x 184-pin DIMM sockets
  - Maximum of 1GB DDR266 RAM
- **IDE Interface:**
  - IDE1 x 44-pin(CF with IDE1 channel)
  - IDE2 x 40-pin
  - PIO Mode 0-4, DMA Mode 0-2 and Ultra DMA/33/66/100/133
  - 2 channels of SATA-150 with IDE mode supported
  - BIOS programmable for 4 IE channels (2*PATA-133 & 2*SATA-150) as primary/secondary/third/forth IDE
- **Onboard Multi-I/O**
  - One floppy port (26-pin FPC connector on the soldering side) supporting one device
  - One SPP/EPP/ECP parallel port (box header)
  - Four 16550 UARTs compatible serial ports with +5V/+12V power output in pin 1 or pin 9 via jumper setting
    - 3 x RS-232 (box header)
    - 1x RS-232/422/485 box header and selectable via jumper setting(COM2)
  - 1 x IrDA (box header) for wireless communcation
- **VGA Controller:**
  - Internal AGP-4x controller integrated in VIA CLE266
  - Supports CRT, 24-bit TTL LCD or LVDS LCD
  - CRT resolution up to 1400x1050, Flat Panel up to 1600x1200
  - Supports DualView features as CRT+TTL LCD or Dual LVDS LCD
  - LCD Backlight control supported
  - High quality DVD video Playback

- **Ethernet:**
  - 1x default RTL8100C for 10/100Base-T or optional 1x RTL8110s for 10/100/1000Base-T
- **USB Interface:** 4 USB ports; USB Spec. Rev. 2.0 compliant
- **AUDIO**
  - AC'97 2.2 S/PDIF extension compliant codec
  - 18-bit stereo full duplex SD codec
  - 3D stereo expansion for simulated surround
  - 18-bit independent rate stereo ADC/DAC
  - 4 stereo, 2 mono analog line-level inputs
  - Low Power consumption mode
  - Exceeds Microsoft® WHQL logo requirements
- **PICMG compliant PCI extension slot**
  - Support max. up to 2 32-bit/33MHz PCI Masters
- **Mini PCI:**
  - 1 Type-III Mini PCI
- **Compact Flash TYPE II**
  - **Supports CompactFlash memory modules**
  - **IBM MicroDrive supported**
- **PC104 plus:**
  - **Supports 3 PCI Masters and 1 slave**
- **Power Management**: ACPI (Advanced Configuration and Power Interface)
- **Watchdog Timer:** Watch Dog Timer Time-out value. of 0~255 second
- **Operating Temperature:** $0^{o}C$~$60^{o}C$ ($32^{o}F$~$140^{o}F$)
- **Operating Humidity:** 5%~95%; non-condensing
- **Form Factor:** 5.25" form factor
- **Dimensions:** 203.20 x 146.05 mm^2

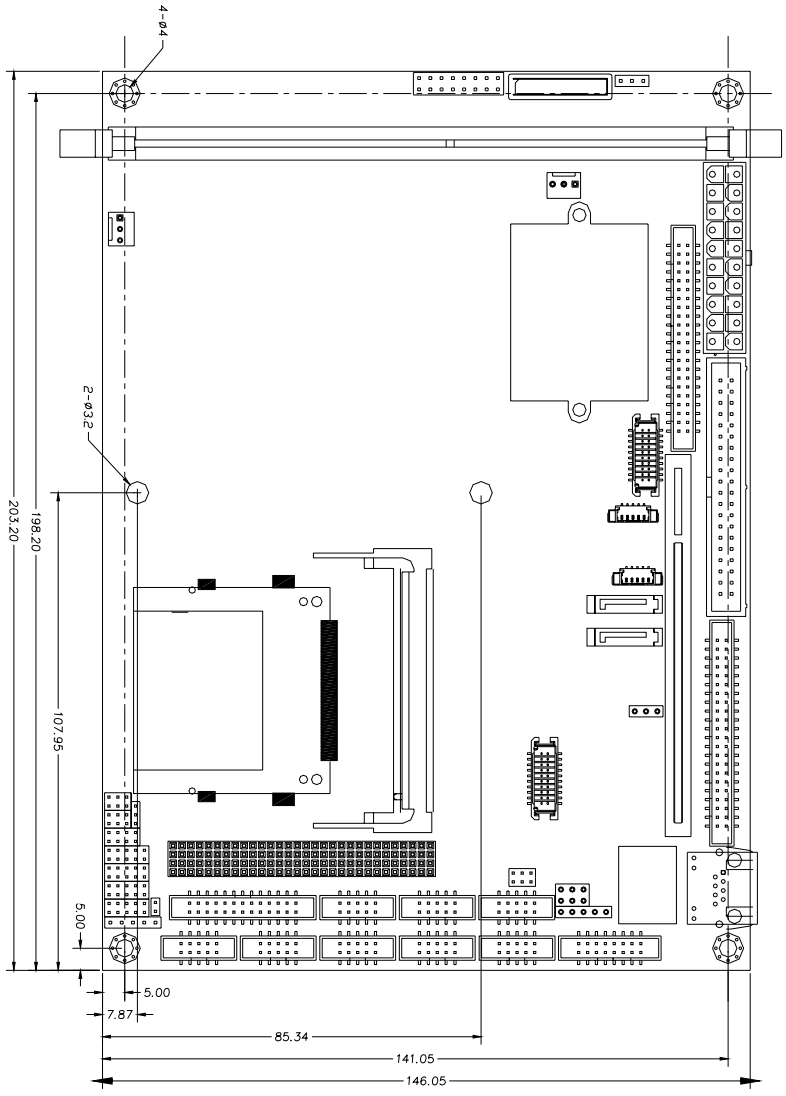
NOTE: *Specifications are subject to change without notice.*

1.2 Utilities Supported

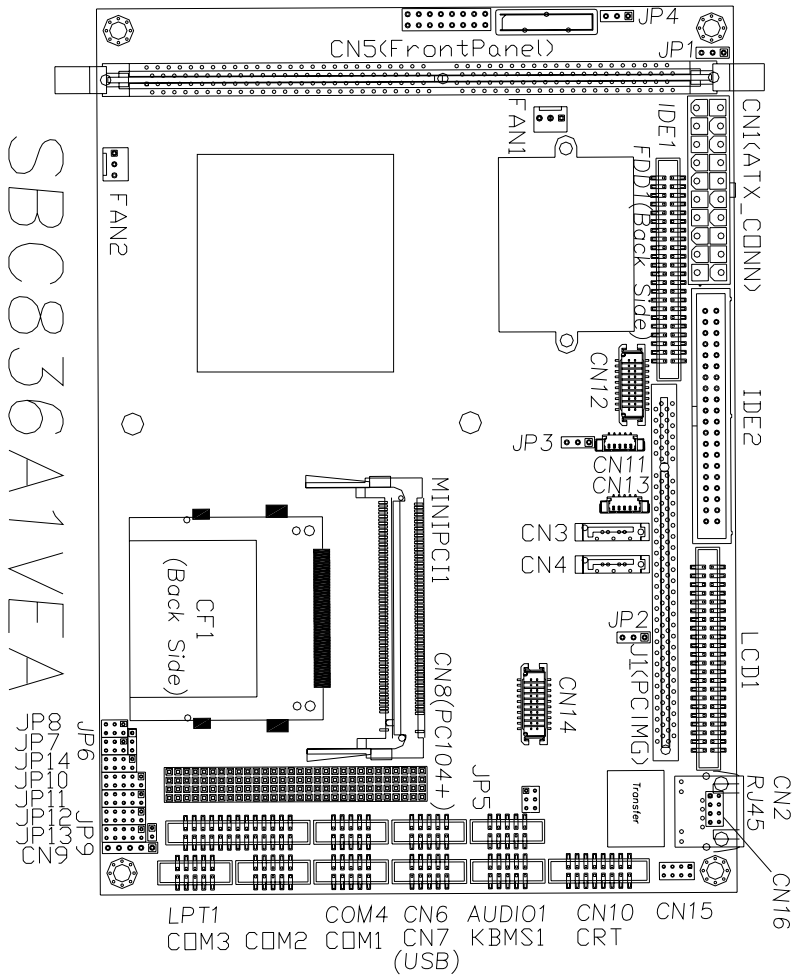
- **VIA Chipset Driver**
- **Ethernet Utility and Drivers**
- **VGA Drivers**

Chapter 2
Jumpers and Connectors

2.1 Board Dimensions



2.2 Board Layout



2.3 Jumper Settings

The SBC836A1 is configured to match the needs of your application by proper jumper settings. The following tables show the correct jumper settings for the onboard devices.

Jumper	Default Setting	Jumper Setting
JP1	AT&ATX Selection Default: ATX	Short 2-3
JP2	IGA2 TTL/LVDS LCD VDD Selection Default: TTL 5V /LVDS 3.3V	Short 2-3(3.3V)
JP3	IGA1 LVDS LCD VDD Selection Default: 3.3V	Short 2-3
JP4	Clear CMOS Selection Default: VBAT	Short 1-2
JP5	Audio Line Out/Speaker Out Jumper Selection Default: Speak Out	Short 3-5,4-6
JP6	Compact flash power select Default: 5V	Short 1-2
JP7	COM2 RS232/422/485 Default: RS232	Short 3-5,4-6
JP8	COM2 RS232/422/485 Default: RS232	Short 3-5,4-6
JP9	CF Master/Slave Defalut: Slave	Open
JP10	COM1 +12V/5V/RS232 Default: RS232	Short 7-9,8-10
JP11	COM2 +12V/5V/RS232 Default: RS232	Short 7-9,8-10
JP12	COM4 +12V/5V/RS232 Default: RS232	Short 7-9,8-10
JP13	COM3 +12V/5V/RS232 Default: RS232	Short 7-9,8-10
JP14	COM2 RS232/422/485 Default: RS232	Short 1-2

2.3.1 AT&ATX Selection: JP1

Select	Settings
AT POWER	Short 1-2
ATX POWER	Short 2-3(Default)

2.3.2 IGA2 TTL/LVDS LCD VDD Selection (V_{DD} of LCD1 and CN14): JP2

VDDM	Settings
5V (TTL default)	Short 1-2
3.3V(LVDS default)	Short 2-3

2.3.3 IGA1 LVDS LCD VDD Selection (V_{DD} of CN12): JP3

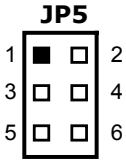
VDDM	Settings
5V	Short 1-2
3.3V(LVDS default)	Short 2-3

2.3.4 CMOS Clear Jumper: JP4

Options	Settings
Normal (default)	Short 1-2
Clear CMOS	Short 2-3

2.3.5 Audio Line Out/Speaker Out Jumper: JP5

Options	Settings
Line Out	Short 1-3, 2-4
Speaker Out (default)	Short 3-5, 4-6



2.3.6 Compact flash power select: JP6

Options	Settings
5V(default)	Short 1-2
3.3V	Short 2-3

2.3.7 Compact flash Master/Slave: JP9

Options	Settings
Slave(default)	Open
Master	Short

2.3.8 COM1~COM4 Mode Select: JP10, JP11, JP12, JP13

COM1	JP10
Pin 1,8=5V	Short 1-3,2-4
*Pin 1=DCD	Short 7-9
Pin 1,8=12V	Short 3-5,4-6
Pin 8=RI	Short 8-10

COM2	JP11
Pin 1,8=5V	Short 1-3,2-4
*Pin 1=DCD	Short 7-9
Pin 1,8=12V	Short 3-5,4-6
Pin 8=RI	Short 8-10

COM3	JP13
Pin 1,8=5V	Short 1-3,2-4
*Pin 1=DCD	Short 7-9
Pin 1,8=12V	Short 3-5,4-6
Pin 8=RI	Short 8-10

COM4	JP12
Pin 1,8=5V	Short 1-3,2-4
*Pin 1=DCD	Short 7-9
Pin 1,8=12V	Short 3-5,4-6
Pin 8=RI	Short 8-10

2.3.9 COM2 Mode Select: JP7, JP8, JP14

COM2	JP7	JP8	JP14
RS-232 (default)	3-5, 4-6	3-5, 4-6	1-2
RS-422	1-3, 2-4	1-3, 2-4	3-4, 7-8
RS-485	1-3, 2-4	1-3, 2-4	5-6, 7-8

2.4 Connectors

The connectors allow the CPU card to connect with other parts of the system. Some problems encountered by your system may be a result from loose or improper connections. Ensure that all connectors are in place and firmly attached. The following table lists the function of each connector on the **SBC836A1**. Their corresponding pin assignments are described in Chapter 3.

Label	Connectors
CN1	ATX Connector (AT & ATX)
CN2	LAN RJ45 Connector
CN3	S-ATA 2 Connector
CN4	S-ATA 1 Connector
CN5	Front Panel Bezel CONN.
CN6	USB 1&2
CN7	USB 3&4
CN8	PC104+ Connector
CN9	IRDA Connector
CN10	VGA Connector
CN11	IGA1 LVDS Power CONN.
CN12	IGA1 24bit LVDS CONN.
CN13	IGA2 LVDS Power CONN.
CN14	IGA2 24bit LVDS CONN.
CN15	LAN LED Connector
CN16	LAN Connector (Default CN2_RJ45)
FAN1,2	CPU&SYS FAN CONN.
FDD1	Floopy Disk Connector
KBMS1	Keyboard&Mouse CONN
COM1~4	COM PORT Connector
LPT1	PRINT PORT Connector
AUDIO1	AUDIO Connector
CF1	Compact Flash CONN
J1	PICMG Connector
MINIPCI1	Mini PCI Connector
LCD1	IGA2 24bit TTL CONN.

2.4.1 ATX Connector: CN1

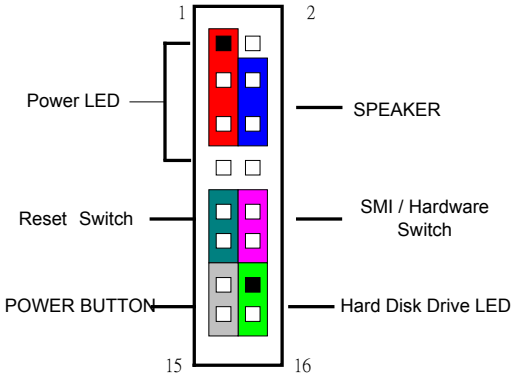
PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

2.4.2 SATA-150 1, 2 Connector: CN4, CN3

- Dual Channel Serial ATA Controller
  - Complies with Serial ATA Specification Revision 1.0
  - Dual Channel master mode PCI
  - On-chip two-channel Serial ATA (S-ATA) PHY for support of up to two S-ATA devices directly
  - Supports optional external S-ATA PHY on P-ATA secondary port for support of two additional S-ATA devices
  - Primary P-ATA port can support two P-ATA devices (master and slave) along with two S-ATA devices on the PATA
  - Secondary port (with external S-ATA PHY) plus two more S-ATA devices on the direct S-ATA interface
  - S-ATA drive transfer rate is capable of up to 150 MB/s per channel (serial speed of 1.5 Gbit/s)
  - External Crystal input for Serial ATA port operation

2.4.3 Front Panel Bezel Connector: CN5

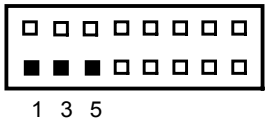
The front bezel of the case has a control panel that provides light indication of the computer activities and switches to change the computer status. **CN5** is a 16-pin header that provides interfaces for the following functions.



Power LED: Pins 1, 3, 5

The power LED indicates the status of the main power switch. The keylock switch, when closed, will disable the keyboard function.

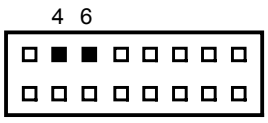
Pin #	Signal Name
1	Power LED (+)
3	Ground
5	Ground



Speaker: Pins 4, 6

This connector provides an interface to a speaker for audio tone generation.

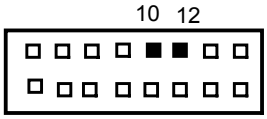
Pin #	Signal Name
4	Short 4-6 for Internal Buzzer
6	



SMI/Hardware Switch: Pins 10, 12

This connector supports the "Green Switch" from the control panel, which, when pressed, will force the system into the power-saving mode immediately.

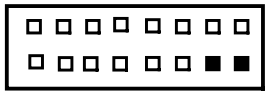
Pin #	Signal Name
10	Sleep
12	Ground



ATX Power On /Off Button: Pins 13, 15

This jumper is only useful when installing an ATX power supply.

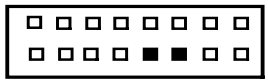
Pin #	Signal Name
13	PW_BN+
15	GND



Reset Switch: Pins 9, 11

The reset switch allows the user to reset the system without turning the main power switch OFF and then ON. Orientation is not required when making a connection to this header.

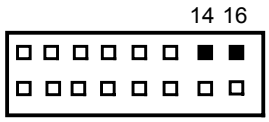
Pin #	Signal Name
9	Reset
11	GND



HDD LED: Pins 14, 16

This connector connects to the hard drive activity LED on control panel.

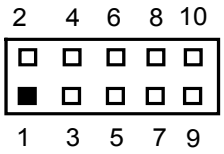
Pin #	Signal Name
14	VCC
16	HDD_LED



2.4.4 USB 1&2, USB 3&4 Connector: CN6, CN7

The Universal Serial Bus (USB) connector on **SBC836A1** is used when installing peripherals supporting the USB interface.

CN6: USB1&2 Connector		CN7: USB1&2 Connector	
Pin	Description	Pin	Description
1	VCC	2	VCC
3	USB1+	4	USB2+
5	USB1-	6	USB2-
7	GND	8	GND
9	GND	10	GND



2.4.5 PC104+ Connector: CN8

- The PCI bus connector is a 4x30 (120-pin) 2mm pitch stackthrough connector as opposed to the 124-pin edge connector on standard 32-bit PCI Local Bus.
- The 120-pin PCI does not support 64-bit Extensions, JTAG, PRSNT, or CLKRUN signals.

CN2: PC/104 plus Bus Pin Assignment

Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name
1	GND/5.0V KEY2	2	VI/O	3	AD05	4	C/BE0*
5	GND	6	AD11	7	AD14	8	AD14
9	SERR*	10	GND	11	STOP*	12	+3.3V
13	FRAME*	14	GND	15	AD18	16	AD21
17	+3.3V	18	IDSEL0	19	AD24	20	GND
21	AD29	22	+5V	23	REQ0*	24	GND
25	GNT1*	26	+5V	27	CLK2	28	GND
29	+12V	30	-12V	31	Reserved	32	AD02
33	GND	34	AD07	35	AD09	36	VI/O
37	AD13	38	C/BE1*	39	GND	40	PERR*
41	+3.3V	42	TRDY*	43	GND	44	AD16
45	+3.3V	46	AD20	47	AD23	48	GND
49	C/BE3*	50	AD26	51	+5V	52	AD30
53	GND	54	REQ2*	55	VI/O	56	CLK0
57	+5V	58	INTD*	59	INTA*	60	Reserved
61	+5	62	AD01	63	AD04	64	GND
65	AD08	66	AD10	67	GND	68	AD15
69	SB0*	70	+3.3V	71	LOCK*	72	GND

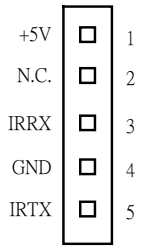
Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name
73	IRDY*	74	+3.3V	75	AD17	76	GND
77	AD22	78	IDSEL1	79	VI/O	80	AD25
81	AD28	82	GND	83	REQ1*	84	+5V
85	GNT2*	86	GND	87	CLK3	88	+5V
89	INTB*	90	Reserved	91	AD00	92	+5V
93	AD03	94	AD06	95	GND	96	M66EN
97	AD12	98	+3.3V	99	PAR	100	SDONE
101	GND	102	DEVSEL*	103	+3.3V	104	C/BE2*
105	GND	106	AD19	107	+3.3V	108	IDSEL2
109	IDSEL3	110	GND	111	AD27	112	AD31
113	VI/O	114	GNT0*	115	GND	116	CLK1
117	GND	118	RST*	119	INTC*	120	GND/3.3V KEY2

Notes:

- 1. The shaded area denotes power or ground signals.
- 2. The KEY pins are to guarantee proper module installation. Pin-A1 will be removed and the female side plugged for 5.0V I/O signals and Pin-D30 will be modified in the same manner for 3.3V I/O. It is recommended that both KEY pins (A1 and D30) be electrically connected to GND for shielding.

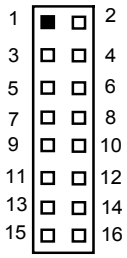
2.4.6 IRDA Connector: CN9

CN9 is a 5-pin Pitch2.54mm IrDA connector for wireless communication.



2.4.7 VGA Connector: CN10

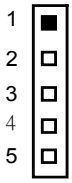
Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	AGND	3	Green
4	N/A	5	Blue	6	AGND
7	N/A	8	DDC DAT	9	GND
10	AGND	11	GND	12	Horizontal Sync
13	AGND	14	Vertical Sync	15	DDC CLK
16	NC				



2.4.8 IGA1 LVDS Power Connector: CN11

CN11 is a Hirose DF13-5P- 1.25V(50) connector, the match side connector is DF13-5S-1.25C

Pin	Signal
1	+12VM1
2	VCC (+5V)
3	+12VM1
4	ENABLE
5	GND



2.4.9 IGA1 24bit LVDS Connector: CN12

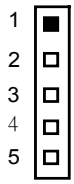
CN11 is a Hirose DF13-20DP- 1.25V(50) connector, the match side connector is DF13-20DS-1.25DSA(50)

Pin	Signal	Pin	Signal
1	VCCM1	2	VCCM1
3	VCCM1	4	VCCM1
5	IGA1_TX0-	6	IGA1_TX3-
7	IGA1_TX0+	8	IGA1_TX3+
9	GND	10	GND
11	IGA1_TX1-	12	IGA1_CLK-
13	IGA1_TX1+	14	IGA1_CLK+
15	GND	16	GND
17	IGA1_TX2-	18	GND
19	IGA1_TX2+	20	GND

2.4.10 IGA2 LVDS Power Connector: CN13

CN13 is a Hirose DF13-5P- 1.25V(50) connector, the match side connector is DF13-5S-1.25C

Pin	Signal
1	+12VM
2	VCC (+5V)
3	+12VM
4	ENABLE
5	GND



2.4.11 IGA2 24bit LVDS Connector: CN14

CN14 is a Hirose DF13-20DP- 1.25V(50) connector, the match side connector is DF13-20DS-1.25DSA(50)

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	IGA2_TX0-	6	IGA2_TX3-
7	IGA2_TX0+	8	IGA2_TX3+
9	GND	10	GND
11	IGA2_TX1-	12	IGA2_CLK-
13	IGA2_TX1+	14	IGA2_CLK+
15	GND	16	GND
17	IGA2_TX2-	18	GND
19	IGA2_TX2+	20	GND

2.4.12 LAN LED Connector: CN15

CN15 is a 4x2 2.0mm PIN HEADER for LAN LED use.

Pin	Signal	Pin	Signal
1	ACT LED	2	+3.3VSB(Standby)
3	LINK100_LED	4	+3.3VSB(Standby)
5	LINK10_LED	6	+3.3VSB(Standby)
7	LINK1000_LED	8	+3.3VSB(Standby)

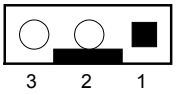
2.4.13 LAN Connector: CN16

CN16 is a 4x2 2.0mm PIN HEADER for LAN singal use.**(Default CN2_RJ45 connector ,for customer design I/O board only)**

Pin	Signal	Pin	
1	TX1+	2	TX1-
3	TX2+(RX1+)	4	TX3+ (Giga LAN only)
5	TX3- (Giga LAN only)	6	TX2-(RX1-)
7	TX4+ (Giga LAN only)	8	TX4- (Giga LAN only)

2.4.14 FAN Connector: FAN1, FAN2

Pin	Description
1	Sensor
2	+12V
3	GND



2.4.15 Floopy Disk Connector: FDD1

The **SBC836A1** provides a 26-pin FCC Z.I.F. type connector, and the general output for support of a single floppy drives. The floppy drive could be any one of the following types: 3.5" 720KB or 1.44MB/2.88MB.

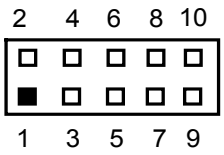
FDD1: FDD Connector Pin Assignment

Pin	Description	Pin	Description
1	+5V	14	STEP
2	INDEX	15	GND
3	+5V	16	WDATA
4	DRIVE0	17	GND
5	+5V	18	WGATE
6	DSKCHG	19	GND
7	No connector	20	TRK0
8	READY	21	GND
9	HDOUT	22	WPT
10	MOTOR ON	23	GND
11	No connector	24	RDATA
12	DIR	25	GND
13	HDSEL	26	SIDE0

2.4.16 Keyboard & Mouse Connector: KBMS1

KBMS1: Keyboard and PS/2 Mouse Connector Pin Assignment

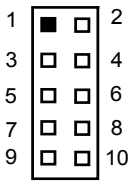
Pin	Description	Pin	Description
1	Keyboard Vcc	2	Keyboard Data
3	Keyboard CLK	4	GND
5	Vcc	6	Mouse Vcc
7	Mouse Data	8	Mouse CLK
9	GND	10	+12V



2.4.17 COM PORT Connector: COM1~COM4

The four COM ports have +5V/+12V power capability on pin 1 and pin 8, depending on the jumper setting. (See Section 2.3.8) The RS-232 pin assignments are listed on the following table.

Pin	Description	Pin	Description
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC



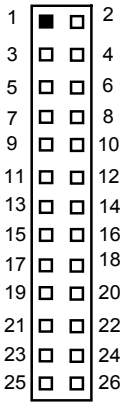
The RS-422/485 pin assignments for **COM2** are listed below.

Pin #	Signal Name	
	R2-422	RS-485
1	TX-	DATA-
2	No connector	No connector
3	TX+	DATA+
4	No connector	No connector
5	RX+	No connector
6	No connector	No connector
7	RX-	No connector
8	No connector	No connector
9	GND	GND
10	No connector	No connector

2.4.18 Print Port Connector: LPT1

LPT1: Parallel Port Connector Pin Assignment

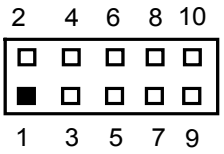
Pin	Description	Pin	Description
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	NC



2.4.19 Audio Connector: AUDIO1

AUDIO1: Audio Connector

Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND



2.4.20 Compact Flash Connector: CF1

The SBC836A1 Series is equipped with a CompactFlash disk socket on the solder side and it supports the IDE interface CompactFlash disk card. The socket itself is especially designed to prevent any incorrect installation of the CompactFlash disk card.

When installing or removing the CompactFlash disk card, please make sure that the system power is off.

2.4.21 PICMG compliant PCI Slot: J1

The **SBC836A1 Series** provides a free PICMG compliant PCI slot for PCI device expansion.

J1: PICMG Slot Connector Pin Assignment

Pin	Signal	Pin	Signal
B1	-12V	A1	TRST#
B2	Reserved	A2	+12V
B3	GND	A3	Reserved
B4	Reserved	A4	Reserved
B5	+5V	A5	+5V
B6	+5V	A6	INTA#
B7	INTB#	A7	INTC#
B8	INTD#	A8	+5V
B9	Reserved	A9	Reserved
B10	REQ1#	A10	+5V(IO)
B11	Reserved	A11	Reserved
B12	GND	A12	GND
B13	GND	A13	GND
B14	CLKA	A14	GNT1#
B15	GND	A15	RST#
B16	CLKB	A16	+5V(IO)
B17	GND	A17	GNT0#
B18	REQ0#	A18	GND
B19	+5V(IO)	A19	Reserved
B20	AD31	A20	AD30
B21	AD29	A21	Reserved
B22	GND	A22	AD28
B23	AD27	A23	AD26
B24	AD25	A24	GND
B25	Reserved	A25	AD24
B26	CBE3#	A26	IDSEL
B27	AD23	A27	+3.3V
B28	GND	A28	AD22
B29	AD21	A29	AD20
B30	AD19	A30	GND

Pin	Signal	Pin	Signal
B31	Reserved	A31	AD18
B32	AD17	A32	AD16
B33	CBE2#	A33	+3.3V
B34	GND	A34	FRAME#
B35	IRDY#	A35	GND
B36	+3.3V	A36	TRDY#
B37	DEVSEL#	A37	GND
B38	GND	A38	STOP#
B39	LOCK#	A39	Reserved
B40	PERR#	A40	SDONE
B41	Reserved	A41	SBO#
B42	SERR#	A42	GND
B43	Reserved	A43	PAR
B44	CBE1#	A44	AD15
B45	AD14	A45	Reserved
B46	GND	A46	AD13
B47	AD12	A47	AD11
B48	AD10	A48	GND
B49	GND	A49	AD09
B52	AD08	A52	CBE0#
B53	AD07	A53	Reserved
B54	Reserved	A54	AD06
B55	AD05	A55	AD04
B56	AD03	A56	GND
B57	GND	A57	AD02
B58	AD01	A58	AD0
B59	+5V(IO)	A59	+5V(IO)
B60	Reserved	A60	Reserved
B61	+5V	A61	+5V
B62	+5V	A62	+5V

2.4.22 Mini PCI Connector: MINIPCI1

J2: Mini-PCI Connector Pin Assignment

Pin	Signal	Pin	Signal
1	TIP	2	RING
	KEY		KEY
3	LAN_RD+	4	LAN_TD+
5	LAN_RD-	6	LAN_TD-
7	RJ45 termination	8	RJ45 termination
9	RJ45 termination	10	RJ45 termination
11	LAN_LED1+	12	LAN_LED2+
13	LAN_LED1-	14	LAN_LED2-
15	CHGND	16	RESERVED
17	INTB#	18	5V
19	3.3V	20	INTA#
21	RESERVED	22	RESERVED
23	GND	24	3.3VAUX
25	CLK	26	RST#
27	GND	28	3.3V
29	REQ#	30	GNT#
31	3.3V	32	GND
33	AD31	34	PME#
35	AD29	36	RESERVED
37	GND	38	AD30
39	AD27	40	3.3V
41	AD25	42	AD28
43	RESERVED	44	AD26
45	C/BE3#	46	AD24
47	AD23	48	IDSEL
49	GND	50	GND
51	AD21	52	AD22
53	AD19	54	AD20
55	GND	56	PAR
57	AD17	58	AD18
59	C/BE2#	60	AD16
61	IRDY#	62	GND
63	3.3V	64	FRAME#
65	CLKRUN#	66	TRDY#
67	SERR#	68	STOP#
69	GND	70	3.3V

Pin	Signal	Pin	Signal
71	PERR#	72	DEVSEL#
73	C/BE1#	74	GND
75	AD14	76	AD15
77	GND	78	AD13
79	AD12	80	AD11
81	AD10	82	GND
83	GND	84	AD09
85	AD08	86	C/BE0#
87	AD07	88	3.3V
89	3.3V	90	AD06
91	AD05	92	AD04
93	RESERVED	94	AD02
95	5V	96	AD00
97	5V	98	RESERVED
99	AD01	100	RESERVED
101	GND	102	GND
103	RESERVED	104	RESERVED
105	RESERVED	106	RESERVED
107	RESERVED	108	RESERVED
109	RESERVED	110	RESERVED
111	RESERVED	112	RESERVED
113	RESERVED	114	GND
115	RESERVED	116	RESERVED
117	RESERVED	118	RESERVED
119	RESERVED	120	RESERVED
121	RESERVED	122	RESERVED
123	RESERVED	124	RESERVED

2.4.23 IGA2 24bit TTL Connector: LCD1

Pin	Signal	Pin	Signal	Pin	Signal
1	-12V	2	+12VM	3	GND
4	GND	5	VCCM	6	VCCM
7	ENAVEE	8	GND	9	P0
10	P1	11	P2	12	P3
13	P4	14	P5	15	P6
16	P7	17	P8	18	P9
19	P10	20	P11	21	P12
22	P13	23	P14	24	P15
25	P16	26	P17	27	P18
28	P19	29	P20	30	P21
31	P22	32	P23	33	GND
34	GND	35	SHFCLK	36	FLM
37	M	38	LP	39	GND
40	ENABKL	41	GND	42	-SHFCLK
43	VCCM	44	VCCM		

Flat Panel Connector Pin Description

Name	Description
P0~P23	Flat panel data output
ENABKL	Activity Indicator and Enable Backlight outputs
SHFCLK	Shift clock. Pixel clock for flat panel data
M	M signal for panel AC drive control
LP	Latch pulse. Flat panel equivalent of HSYNC
FLM	First line marker. Flat panel equivalent of VSYNC
+12VM	+12V power controlled by chipset
ENAVEE	Power sequencing controls for panel LCD bias volt
VCCM	3.3V or 5V selected by JP2

Flat Panel Interface Pins for Color TFT LCD

Pin	TFT	
	18-bit	24-bit
LP	HSYNC	HSYNC
FLM	VSYNC	VSYNC
SHFCLK	CK	CK
M	DE	DE
ENAVDD	ENAVDD	ENAVDD
ENABLK	ENABLK	ENABLK
P23	R5	R7
P22	R4	R6
P21	R3	R5
P20	R2	R4
P19	R1	R3
P18	R0	R2
P17	--	R1
P16	--	R0
P15	G5	G7
P14	G4	G6
P13	G3	G5
P12	G2	G4
P11	G1	G3
P10	G0	G2
P9	--	G1
P8	--	G0
P7	B5	B7
P6	B4	B6
P5	B3	B5
P4	B2	B4
P3	B1	B3
P2	B0	B2
P1	--	B1
P0	--	B0

Chapter 3
Hardware Description

3.1 Microprocessors

The **SBC836A1** supports VIA EDEN 400/667/800/1GHZ CPUs. Systems based on these CPUs can be operated under Windows XP/NT/2000 and Linux environments. The system performance depends on the microprocessor installed onboard.

3.2 BIOS

System BIOS used on the **SBC836A1** is Phoenix-Award Plug and Play BIOS. The **SBC836A1** contains a single 4Mbit Flash.

3.3 System Memory

The **SBC836A1** inductrial CPU board supports one 184-pin DDR DIMM (Dual In-Line Memory Module) socket for a maximum memory of 1GB buffer DDR266 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB and 1GB.

3.4 I/O Port Address Map

TheVIA EDEN CPU communicates via I/O ports. It has a total of 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0C0-0DF	DMA controller #2
0F0	Clear math coprocessor busy signal
0F1	Reset math coprocessor
0F8-0FF	Math processor
1F0-1F7	Fixed disk controller
294~297	PCI Bus
376	IDE Controller
378-37F	Parallel port #1(Default disable)
380-38F	Reserved
3A0-3AF	Reserved
3B0-3DF	VGA card
3F0-3F5	Floppy disk controller
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Reserved
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Reserved
4D0~4D1	PCI Bus
CF8~CFF	PCI Bus
E000~E0FE	Enternet
E100~E70E	IDE Controller
E800~EA1E	USB Controller

- 1nd I/O W83697HF: 2EH
- 2nd I/O W83627: 4EH

3.5 Interrupt Controller

NMI	Parity Check Error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	Audio & Ethernet
IRQ6	Floppy disk controller
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	ACPI(Enable)
IRQ10	COM3
IRQ11	COM4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE Channel

This page does not contain any information.

Chapter 4
Award BIOS Utility

Chapter 4 describes the different settings available in the Award BIOS that comes with the **SBC836A1**. Also contained here are instructions on how to set up the BIOS configuration.

4.1 BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in the system ROM supports Intel processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

4.2 BIOS Setup

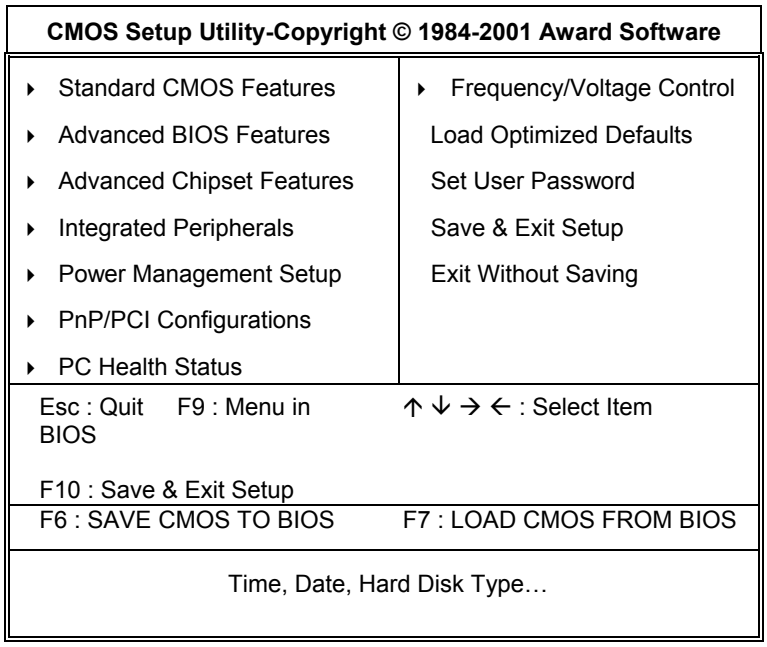
The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When the computer is turned *ON*, the Award BIOS is immediately activated. The following message will appear on the screen:

Press <DEL> to Enter Setup

Then, press the <Del> key immediately to enter the Setup utility. The delay of pressing the <Del> key will cause POST (Power On Self Test) to continue with the test routines, thus preventing invoking the Setup. In this case, the system has to be restarted for entering the BIO setup by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. Besides, turning the system OFF first and then ON again can also restart the system.

When entering the Setup utility, the Main Menu screen will appear on the screen. Various setup functions and exit choices can be selected from this menu.

In general, the arrow keys are used to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.


CMOS Setup Utility-Copyright © 1984-2001 Award Software
Standard CMOS Features
Advanced BIOS Features
Advanced Chipset Features
Integrated Peripherals
Power Management Setup
PnP/PCI Configurations
PC Health Status
Frequency/Voltage Control
Load Optimized Defaults
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS
↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
F6 : SAVE CMOS TO BIOS
F7 : LOAD CMOS FROM BIOS
Time, Date, Hard Disk Type…

The section below the setup items in the Main Menu displays the control keys for this menu. Another section located at the bottom of the Main Menu, just below the control keys section, displays information on the currently highlighted item in the list.

NOTE: *If the computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.*

Avoid making any changes to the chipset defaults are strongly recommanded. These defaults have been carefully chosen by both Award and the system manufacturer to provide the absolute maximum performance and reliability.

4.2.1 Standard CMOS Setup

"Standard CMOS Setup" is used to record some basic hardware configurations in the computer system and set the system clock and error handling. If the motherboard is already installed in a working system, there is no need to enter this option. However, the Standard CMOS option has to be setup in any of the following situations: the system hardware configurations are changed, the onboard battery fails, and the configuration stored in the CMOS memory is lost or damaged.

Phoenix – AwardBIOS CMOS Setup Utility
Standard CMOS Features

		Item Help
Date (mm:dd:yy)	Wed, Jul 20 2004	
Time (hh:mm:ss)	13 : 9 : 11	
		Menu Level ▶
▶ IDE Primary Master	None	
▶ IDE Primary Slave	None	Change the Day, month, Year and Century
▶ IDE Secondary Master	None	
▶ IDE Secondary Slave	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt on	All, But keyboard	
Base Memory	640K	
Extended Memory	494960k	
Total Memory	491520k	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

At the bottom of the menu are the control keys for the use of this menu. The <F1> key can be pressed in each item field to display the relevant information for help. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following pages describe each item of this menu.

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

- **Time**
  The time format is <hour> <minute> <second> accepting either function key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave**
  This category identifies the type of the channel that is installed in the computer. There are 45 predefined types and 2 user definable types for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.
  Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of the drive in the system must match with the drive table. The hard disk will not work properly if the improper information within this category is entered. If the disk drive type does not match or is not listed, the Type User is used to define the drive type manually.
  If the Type User is selected, related information has to be entered. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from the hard disk vendor or the system manufacturer.
  If the controller of HDD interface is ESDI, select "Type 1".
  If the controller of HDD interface is SCSI, select "None".
  If the controller of HDD interface is CD-ROM, select "None".

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Drive A type/Drive B type**
  The category identifies the types of floppy disk drive A or drive B installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5.25 inch PC-type standard drive; 360Kb capacity
1.2M, 5.25 in	5.25 inch AT-type high-density drive; 1.2MB capacity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb capacity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB capacity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB capacity

- **Halt On**
  This field determines whether the system will halt if an error is detected during power up.

No errors	The system boot will halt on any error detected. (default)
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

4.2.2 Advanced BIOS Features

This section is used to configure and improve the system and set up some system features according to the user's preference.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Hard Disk Boot Priority	Press Enter	Item Help
Virus Warning	Disabled	
CPU Internal Cache	Enabled	Menu Level ►
CPU L2 Cache ECC Checking	Enabled	
Quick Power On Self Test	Enabled	Allows you to
First Boot Device	Floppy	choose the VIRUS
Second Boot Device	HDD-0	warning feature
Third Boot Device	LS120	for IDE Hard disk
Boot Other Device	Enabled	boot sector
Onboard Lan boot Rom	Disable	protection. If this
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Enabled	function is enable
Boot Up NumLock Status	On	and someone
Gate A20 Option	Fast	attempts to write
Typematic Rate Setting	Disabled	data into this area,
Typematic Rate (Chars/Sec)	6	BIOS will show
Typematic Delay (Msec)	250	a warning
Security Option	Setup	message on
MPS Version Control For OS	1.4	screen and alarm
OS Select For DRAM > 64MB	Non-OS2	beep
Video BIOS Shadow	Enabled	
Small Logo(EPA) Show	Disabled	
Display Board ID Message	Disabled	

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- **Virus Warning**
  This item protects the boot sector and partition table of the hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, the user can either continue the operation or run an anti-virus program to locate and remove the problem.

  NOTE: *Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. Thus, disable the Virus Warning feature while running any of these programs.*

- **CPU Internal Cache / External Cache**
  Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type and up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items are used to enable (speed up memory access) or disable the cache function. By default, these are ***Enabled***.

- **CPU L2 Cache ECC Checking**
  When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is ***Enabled***.

- **Processor Number Feature**
  When a VIA EDEN CPU is installed, the system automatically detects it and displays this item.

- **Quick Power On Self Test**
  This option speeds up Power On Self Test (POST) after turning on the system power. If it is set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *''Enabled''*.

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**
  These items allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, CDROM, USB Floppy, USB CDROM, USB HDD, and LAN.

- **Boot Other Device**
  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is *Enabled*.

- **Onboard Lan boot rom**
  Choice Enable when you need boot on Lan Funtion ,Like PXE ,RPL….

- **Swap Floppy Drive**
  This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *"Disabled"*.

- **Boot Up Floppy Seek**
  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.

- **Boot Up NumLock Status**
  This option enables and disables the numberlock function of the keypad. The default value is *"On"*.

On	Keypad functions confine with numbers
Off	Keypad functions convert to special functions (i.e., left/right arrow keys)

- **Gate A20 Option**
  The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**
  This determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

- **Typematic Rate (Chars/Sec)**
  This option refers to the number of characters the keyboard can type per second. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec)**
  This option sets the display time interval from the first to the second character when holding a key. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**

  This item limits the access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	The system will not boot and access to Setup will be denied if the incorrect password is entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

NOTE: *To disable security, select PASSWORD SETTING at Main Menu and then password is asked to enter. Do not type anything, just press <Enter> and it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **OS Select for DRAM > 64MB**

  This segment is specifically created for OS/2 when DRAM is larger than 64MB. If the operating system is OS/2 and DRAM used is larger the 64MB, "OS 2" has to be selected; otherwise (under non-OS2), default is "NON-OS2".

- **Video BIOS Shadow**

  Video shadowing increases the video speed by copying the video BIOS into RAM. However, it is still optional depending on the chipset design. The default value of this option is *"Enabled"*.

Enabled	Video BIOS shadowing is enabled
Disabled	Video BIOS shadowing is disabled

4.2.3 Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, changing the default settings in this setup table are not recommended unless the user is well oriented with the chipset features.

Phoenix – AwardBIOS CMOS Setup Utility Advanced Chipset Features		
DRAM Clock/Drive Control	Press Enter	Item Help
AGP & P2P Bridge Control	Press Enter	
CPU & PCI Bus Control	Press Enter	Menu Level ►
Memory Hole	Disabled	
System BIOS Cacheable	Disabled	
Video RAM Cacheable	Disabled	
VGA Share Memory Size	32M	
Select Display Device	CRT	
Panel Type	1027X768 18 bit	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Memory Hole**
  To improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB. The available choices are 15M-16M and Disabled.
- **System BIOS Cacheable**
  Selecting "*Enabled*" allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
  The choice: Enabled, Disabled.
- **Video RAM Cacheable**
  Selecting "Enabled" allows caching of the A/B segment, resulting in better system performance.
  The choice: Enabled, Disabled.
- **VGA Share Memory Size**
  This field selects the memory size that is shared by the VGA.
- **Select Display Device**
  This field selects the type of display CRT/LCD, CRT, LCD

4.2.3.1 DRAM Clock / Driver Control

Phoenix – AwardBIOS CMOS Setup Utility DRAM clock / Drive Control		
Current FSB Frequency	100 MHz	Item Help
Current DRAM Frequency	133MHz	
DRAM Clock	By SPD	Menu Level ►
DRAM Timing	By SPD	
DRAM Cas Latency	2.5	
Bank Interleave	Disabled	
Precharge to Active (Trp)	3T	
Active to Precharge (Tras)	6T	
Active to CMD (Trcd)	3T	
DRAM Command Rate	2T Command	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Current FSB Frequency**
  This field shows the detected FSB of the CPU.
- **Current DRAM Frequency**
  This field shows the detected frequency of the DRAM.

4.2.3.2 DRAM Clock

100 MHz The memory clock speed will run at 200MHz.
133 MHz The memory clock speed will run at 266MHz.

Phoenix – AwardBIOS CMOS Setup Utility DRAM clock / Drive Control		
AGP Aperture Size	64M	Item Help
AGP Driving Control	Auto	
AGP Driving Value	DA	Menu Level ►
AGP Fast Write	Disabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **AGP Aperture Size**
  The field sets aperture size of the graphics. The aperture is a portion of space. Host cycles that hit the aperture range are forwarded to the AGP without any translation
- **AGP Master 1 WS Write**
  When *"Enabled"*, writes to the AGP (Accelerated Graphics Port) executed with one wait states.
- **AGP Master 1 WS Read**
  When *"Enabled"*, read to the AGP (Accelerated Graphics Port) executed with one wait states.
- **AGP Driving Control**
  This item adjusts the AGP driving force. 'Manual' is chosen to key-in an AGP Driving Value. 'Auto' is recommended for avoiding any error in the system.
- **AGP Driving Value**
  This item adjusts the AGP driving force.
- **AGP Fast Write**
  This item enables the AGP model into fast write mode.

4.2.4 Integrated Peripherals

This option sets the hard disk configuration, mode and port.

Phoenix – AwardBIOS CMOS Setup Utility Integrated Peripherals		
VIA OnChip IDE Device	Press Enter	Item Help
VIA OnChip PCI Device	Press Enter	
Super I/O Device	Press Enter	Menu Level ▶
Init Display First	PCI Slot	
V-Link Data 2X Support	Disabled	
IDE HDD Block Mode	Enabled	
Watch Dog Timer Select	Disabled	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Init Display First**
  This item allows you to decide to active whether PCI Slot or AGP first. The options available are PCI Slot, AGP.
- **IDE HDD Block Mode**
  This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

4.2.4.1 VIA OnChip IDE Device

Phoenix – AwardBIOS CMOS Setup Utility VIA OnChip IDE Device		
OnChip SATA	Enabled	Item Help
SATA Mode	IDE	
IDE DMA Transfer Access	Enabled	Menu Level ►
OnChip IDE Channel 0	Enabled	
OnChip IDE Channel 1	Enabled	
IDE Prefetch Mode	Enabled	
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
IDE HDD Block Mode	Auto	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **OnChip SATA**
  The choice: Enabled, Disabled.
- **SATA Mode**
  IDE Mode: On-Chip Serial ATA configuration.
- **OnChip IDE Channel0**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.
- **IDE Prefetch Mode**
  The onboard IDE drive interface supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support prefetching.
- **Primary Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the two IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The options available are Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

- **Primary Master/Slave UDMA**
  Ultra DMA 66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software support Ultra DMA 33/66/100, select Auto to enable BIOS support. The options available are Auto, Mode 0, Mode 1, and Mode 2.

4.2.4.2 VIA OnChip PCI Device

Phoenix – AwardBIOS CMOS Setup Utility VIA OnChip PCI Device		
VIA 3058 Audio	Auto	Item Help
OnChip USB Controller	Enable	
OnChip EHCI Controller	Enabled	Menu Level ►
USB Device Function	Disabled	
USB Keyboard Support	Disabled	
USB Mouse Support	Disabled	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **OnChip USB**
  This should be enabled if the system has a USB installed on the system board and the USB will be used. Even when equipped, if a higher performance controller is added, this feature should be disabled.
  The choice: Enabled, Disabled.

- **USB Keyboard Support**
  Select "*Enabled*" if the system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
  The choice: Enabled, Disabled.

4.2.4.3 Super IO Device

Phoenix – AwardBIOS CMOS Setup Utility Super IO Device		
Onboard FDC Controller	Enabled	Item Help
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	Menu Level ►
UART Mode Select	Normal	
RxD, TxD Active	Hi, Lo	
IR Transmission Delay	Enabled	
UR2 Duplex Mode	Half	
Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	[378/IRQ7	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Onboard FDD Controller**
  Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. The options available are Enabled, Disabled.

- **Onboard Serial Port 1/Port 2**
  Select an address and corresponding interrupt for the first and second serial ports. The options available are 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

- **UART 2 Mode**
  The second serial port offers these infrared interface modes:
  - IrDA
  - ASKIR IrDA-compliant serial infrared port
  - Normal (default value)

  NOTE: **The UART Mode Select will not appear on the menu once you disable the setting of Onboard Serial Port 2.**

  When UART Mode Select is set as ASKIR or IrDA, the options RxD, TxD Active and IR Transmittion delay will appear.

- **IR Function Duplex**
  This item allows you to select the IR half/full duplex funcion.
- **TX, RX inverting enable**
  This item enables the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system.
- **Onboard Parallel Port**
  This item allows you to determine access onboard parallel port controller with which I/O address. The options available are 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.
- **Onboard Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The options available are EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.
- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port for use during ECP mode.
- **Parallel Port EPP Type**
  Select EPP port type 1.7 or 1.9.

4.2.5 Power Management Setup

The Power Management Setup is to save energy of the system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.

Phoenix – AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	Enabled	Item Help
Power Management Oprion	User Define	
HDD Power Down	Disabled	Menu Level ►
Suspend Mode	Disable	
Video Off Option	Suspend -> Off	
Video Off Method	V/H SYNC+Blank	
MODEM Use IRQ	3	
Soft-Off by PWRBTN	Instant-Off	
Ac Loss Auto Restart	Off	
IRQ /Event Acyivity Detect	Press Enter	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- **ACPI Function**
  This item is to enable/disable the Advanced Configuration and Power Interface (ACPI).
  The choice: Enabled, Disabled.

- **Power Management Option**
  This item is to select the Power Management mode.
  The choice: User Define, Min Saving, Max Saving.

- **Video Off Option**
  When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the system enters the Suspend mode.
Susp, Stby --> Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

- **Video Off Method**

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This causes the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.
Blank Screen	This option only writes blanks to the video buffer.

- **Video Off Method**

In suspending, this item is to select the CRT closed method under APM mode.
The choice: Blank Screen, V/H SYNC+Blank, DPMS

- **MODEM Use IRQ**

APM 1.2 function used only.
The choice: NA, 3, 4, 5, 7, 9, 10, 11

- **Soft-off by PWRBTN**

This only works with the system using an ATX power supply. It also allows user to define the type of soft power OFF sequence for the system to follow.

Instant-Off (default)	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF.
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

4.2.6 PNP / PCI Configuration

Phoenix – AwardBIOS CMOS Setup Utility PnP/PCI Configurations		
PNP OS Installed	No	Item Help
Reset Configuration Data	Disabled	
		Menu Level ▶
Resources Controlled By	Auto (ESCD)	
XIRQ Resources	Press Enter	Select Yes if you are using a Plug and play capable operating system select No if you need the BIOS to configure non-boot devices
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	Enabled	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **PNP OS Installed**
  This item is to determine install PnP OS or not. The options available are Yes and No.

- **Reset Configuration Data**
  Normally, this field is *"Disabled"*. Select *"Enabled"* to reset Extended System Configuration Data (ESCD). When exiting Setup or installed a new add-on, the system reconfiguration has caused such a serious conflict that the operating system cannot boot. The options available are Enabled and Disabled.
  configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. The options available are Auto and Manual.

- **Resource controlled by**
  The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and the Plug and Play compatible devices. However, this capability means absolutely nothing unless using a Plug and Play operating system such as Windows®98. The options available are Auto and Manual.

- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.
- **PCI/VGA Palette Snoop**
  Leave this field at "*Disabled*".
  The choice: Enabled, Disabled.
- **Assign IRQ For USB/VGA**
  This item is to enable or disable the IRQ assignment for USB/VGA. The options available are Enabled, Disabled

4.2.7 PC Health Status

This section is to monitor the current hardware status of the CPU fan speeds and the core voltages. This is available only if there is hardware monitoring mechanism onboard.

Phoenix – AwardBIOS CMOS Setup Utility
PC Health Status

Current CPU Temperature	37C/102F	Item Help
Current System Temperature	42C/107F	
Current CPUFAN Speed	4020 RPM	Menu Level ▶
Current SYSTEMFAN Speed	4020 RPM	
Vcore	1.346	
3.3V	3.35	
5V	5.05	
12V	12.3	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- **Current CPUFAN Speed**
  These optional and read-only fields show the current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.
- **Vcore/3.3V/5V/12V**
  Show the voltage of Vcore/3.3V/5V/12V

4.2.8 Frequency/Voltage Control

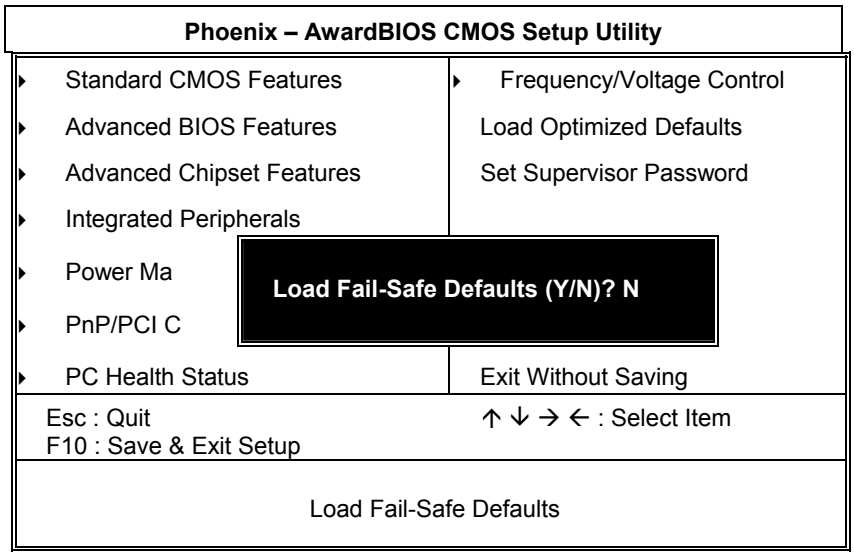
CMOS Setup Utility-Copyright © 1984-2001 Award Software Frequency/Voltage Control		
Auto Detect DIMM/PCI Clk	Enabled	
Spread Spectrum	Disabled	Menu Level ►
CPU Clock	133	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Auto Detect DIMM/PCI Clk**
  When enabled, this item will auto detect if the DIMM and PCI socket have devices and will send clock signal to DIMM and PCI devices. When disabled, it will send the clock signal to all DIMM and PCI socket.
  The choice: Enabled, Disabled.

- **Spread Spectrum**
  This item is to enable/disable the spread spectrum modulate.
  The choice: Enabled, Disabled.

4.2.9 Load Fail-Safe Defaults

This option is to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.



To load BIOS defaults value to CMOS SRAM, enter "Y". If not, enter "N".

4.2.10 Set Supervisor / User Password

Either supervisor or user password, or both of them can be set in this option. The differences between them are:

1. **supervisor password:** can enter and change the options of the setup menus.
2. **user password:** just can enter but do not have the right to change the options of the setup menus.

When this function is selected, the following message will appear at the center of the screen for creating a password.

ENTER PASSWORD:

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. Then, confirm the password by typing the password again and pressing <Enter>. Or, not enter a password and abort the selection by pressing <Esc>.

To disable the password by pressing <Enter> without typing in any password when the message "Enter Password" is showed. Then, message below will appear to confirm that the password has been disabled.

PASSWORD DISABLED.

Once the password is disabled, the system will boot and enter Setup freely.

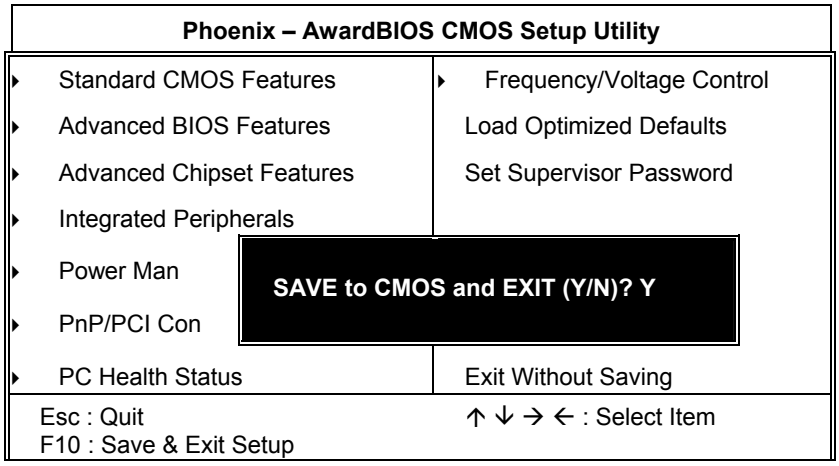
When a password is enabled, it has to be typed to enter the Setup every time. This prevents any unauthorized person from changing the system configuration.

Additionally when a password is enabled, the BIOS can also set to request a password every time the system reboots. This would prevent unauthorized use of the computer.

The user can determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If it set as "Setup", prompting will only occur prior to entering Setup.

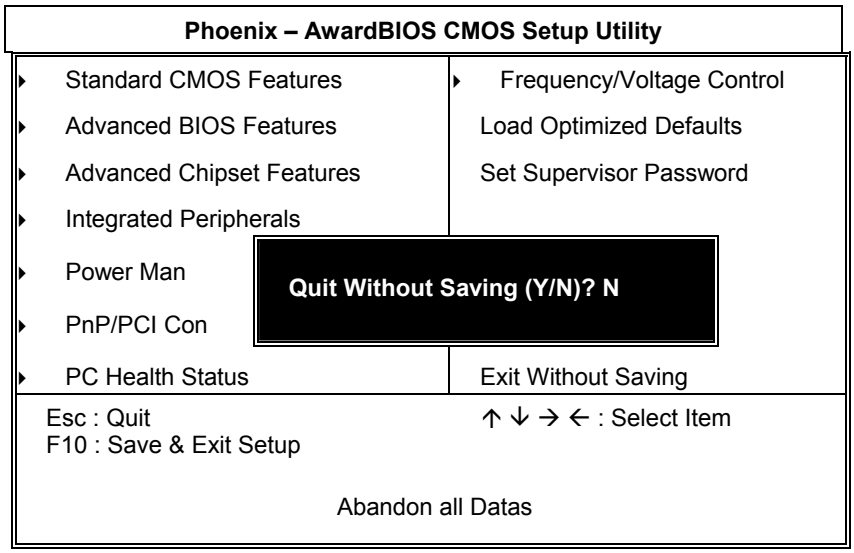
4.2.11 Save & Exit Setup

This is to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs back to Setup utility.



4.2.12 Exit Without Saving

Select this option to exit the Setup utility without saving the changes made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return to Setup utility.



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Appendix A

Serial ATA Setup Information

The board provides the last technology IDE connector. The two slim type connector of Serial ATA are for fast IDE data transfer. Nowadays the Serial ATA can provide the data transfer rate up to 150MB/sec. This is better than the traditional Parallel ATA (Ultra ATA/133) interface for 133MB/sec.

On-Chip Serial ATA configuration:

This option is to setup the Serial ATA work with the modes below:

- **OnChip SATA**
  The choice: Enabled, Disabled.
- **SATA Mode**
  IDE Mode: On-Chip Serial ATA configuration.
- **OnChip IDE Channel0**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

Note:
1.S-ATA (0) support Install Win2k&WinXP in first channel.
2.S-ATA (0,1) can be a Device under WinNT,Win2K,WinXP

3.Win98&ME install should be disable S-ATA.(Fix ACPI Enable Stanby can't use)

This page does not contain any information.

Appendix B
Watch Dog Timer

Watchdog Timer Setting

The watchdog timer makes the system auto-reset while it stops to work for a period. The integrated watchdog timer can be setup as system reset mode by program.

- **Timeout Value Range**
  - 1 to 255
  - Second
- **Program Sample**

Watchdog timer setup as system reset with 5 second of timeout

2E, 87	
2E, 87	
2E, 07	
2F, 00	Logical Device 0
2E, 29	Set WDT Funtion Enable
2F, A0	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F3	Set Second
2F, N	N = 0 or 4
2E, F4	Set Value
2F, M	M = 00 ~ FF

Using the Watchdog Function

```
Start
↓
Un-Lock WDT                 :O 2E 87 ; Un-lock super I/O
                             O 2E 87 ; Un-lock super I/O
↓
Select Logic device         :
                            O 2E 07
                            O 2F 00
Set WDT Funtion             :
                            O 2E 29
                            O 2F A0
Select Logic device         :
                             O 2E 07
                             O 2F 08
Set Second or Minute        :
                             O 2E F3
                             O 2F N        N=00 or 04(See below table)
↓
Set base timer              :O 2E F4
                            O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓
Activate WDT                :O 2E 30
                             O 2F 01
↓
WDT counting
↓
re-set timer                :O 2E F4
                             O 2F M ; M=00,01,02,…FF(See below table)
↓
IF No re-set timer          :WDT time-out, generate RESET

IF to disable WDT           :O 2E 30
                             O 2F 00 ; Can be disable at any time
```

M	N=0	M	N=0	M	N=0	M	N=4
02	1sec	33	50sec	B5	180sec	11	992sec
03	2sec	38	55sec	BF	190sec	22	2012sec
04	3sec	3D	60sec	C9	200sec	33	3032sec
05	4sec	42	65sec	D3	210sec	43	3992sec
06	5sec	47	70sec	DD	220sec	54	5012sec
07	6sec	4C	75sec	E7	230sec	65	6032sec
08	7sec	51	80sec	F1	240sec	75	6992sec
09	8sec	56	85sec	FB	250sec	86	8012sec
M	**N=0**	**M**	**N=0**	**M**	**N=4**	**M**	**N=4**
0B	10sec	65	100sec	05	272sec	97	9032sec
10	15sec	6F	110sec	06	332sec	A7	9992sec
15	20sec	79	120sec	07	392sec	B8	11012sec
1A	25sec	83	130sec	08	452sec	C9	12032sec
1F	30sec	8D	140sec	09	512sec	D9	12992sec
24	35sec	97	150sec	0A	572sec	EA	14012sec
29	40sec	A1	160sec	0B	632sec	FB	15032sec
2E	45sec	AB	170sec	0C	692sec		